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EXAMINER	
HSIEH, PING Y	

ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,497	ROSENFELD, JOSI	
	Examiner	Art Unit	
	PING Y. HSIEH	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,20-24,26 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17,20-24,26 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claims 1-17, 20-24, 26 and 27 are pending.

Claims 18, 19 and 25 are cancelled.

Specification

1. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: a computer-readable carrying software code in claim 17.

Claim Objections

2. Claims 16 and 17 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-3, 7-10, 13, 16, 17, 20-22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goren et al. (U.S. PATENT NO. 7,069,025) in view of Mohseni et al. (U.S. PG-PUB NO. 2005/0048923).

-Regarding claims 1, 16 and 17, Goren et al. disclose a positioning method for a radio system **(as disclosed in Fig. 15 and 16)**, the method comprising: receiving signals at a unit of the system **(receive data signal as disclosed in step 1510, Fig. 15 and further disclosed in col. 22 lines 9 – 11)**, the operation being one of the following: a correlation processing operation **(evaluate correlation function using buffered data signal as disclosed in step 1570, Fig. 15 and further disclosed in col. 22 lines 22 – 30)**, a leading edge processing operation **(as disclosed in step 1585, Fig. 15 and further disclosed in col. 22 lines 36 – 40)**; and then effecting the selected operation **(see Fig. 15 steps 1570 - 1590)**. However, Goren et al. fail to specifically disclose applying at least one test on the received signals prior to processing the signals to select a processing operation on the signals.

Mohseni et al. disclose a test on the received signal SNR prior to the determination of good frame or bad frame as disclosed step 404, fig. 4 and further disclosed paragraph 50.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the method of Goren et al. to do the test of Mohseni et al. before selecting the operation. One is motivated as such in order to reduce the processing power.

-Regarding claim 2, the combination further discloses the test applied comprises determining whether the signal level of the received signal is above a threshold value **(Mohseni et al., determining SNR>SNR threshold as disclosed in step 404, fig. 4)**.

-Regarding claim 3, the combination further discloses in response to the level of the received signal being below the threshold value **(Mohseni et al., when the SNR>SNR threshold = N, fig. 4)**, selecting the correlation processing operation **(Goren et al., evaluate correlation function using buffered data signal as disclosed in step 1575, Fig. 15)**.

-Regarding claims 7 and 26, the combination further discloses repeating the test application and operation steps at predetermined intervals **(Goren et al., repeat the test application and operation steps at the intervals of receiving data signals as disclosed in Fig. 6 and Fig. 15)**.

-Regarding claim 8, the combination further discloses coherently superposing received pulses before the test application step **(Goren et al., evaluate correlation function 1570 as disclosed in Fig. 15)**.

-Regarding claim 9, the combination further discloses convolution of a pulse with a bump function **(Goren et al., leading edge detection 1585, Fig. 15)**.

-Regarding claim 10, the combination further discloses in response to a signal level being below the signal level threshold **(Mohseni et al., when the SNR>SNR threshold = N, fig. 4)**, extending the receiving time period for the signal before the next/successive test application(s) **(Goren et al., when the correlation function quality is not sufficient, evaluate correlation function and test correlation function quality sufficiency again as disclosed in Fig. 15)**.

-Regarding claim 13, the combination further discloses effecting the leading edge processing operation after selection with no intermediate testing or processing **(Goren et al., as disclosed in fig. 15)**.

-Regarding claim 20, Goren et al. disclose a positioning apparatus for a radio system **(as disclosed in Fig. 15 and 16 and further disclosed in col. 22 lines 1 – 5)**, the apparatus comprising: a receiver means to receive radio frequency signals which have potentially suffered at least one of noise degradation and multipath degradation in a propagation environment **(receiver 110, Fig. 1; receive data signal as disclosed in step 1510, Fig. 15 and further disclosed in col. 22 lines 9 – 11)**; a correlation processing operation **(evaluate correlation function using buffered data signal as disclosed in step 1570, Fig. 15 and further disclosed in col. 22 lines 22 – 30)** and a leading edge

processing operation **(as disclosed in step 1585, Fig. 15 and further disclosed in col. 22 lines 36 – 40)**; and a processing means for subsequently processing the tested radio frequency signals with the selected one of the correlation based processing operation and the leading edge processing operation **(see Fig. 15 steps 1570 - 1590)**. However, Goren et al. fail to specifically disclose a test means for test the received radio frequency signals for at least noise degradation to select a processing operation based on the testing.

Mohseni et al. disclose a test on the received signal SNR prior to the determination of good frame or bad frame as disclosed step 404, fig. 4 and further disclosed paragraphs 47-50.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the method of Goren et al. to do the test of Mohseni et al. before selecting the operation. One is motivated as such in order to reduce the processing power.

-Regarding claim 21, the combination further discloses the testing means includes means to determine whether a signal level of the received radio frequency signal is above a threshold value **(Mohseni et al., determining SNR>SNR threshold as disclosed in step 404, fig. 4)**.

-Regarding claim 22, the combination further discloses the testing means includes means which selects the correlation processing operation **(Goren et al., evaluate correlation function using buffered data signal as disclosed in**

step 1575, Fig. 15) if the level of the received signal is below the threshold value **(Mohseni et al., when the SNR>SNR threshold = N, fig. 4)**.

6. Claims 4-6, 23, 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goren et al. (U.S. PATENT NO. 7,069,025) in view of Mohseni et al. (U.S. PG-PUB NO. 2005/0048923) and further in view of Diener et al. (U.S. PATENT NO. 7,006,838).

-Regarding claims 4 and 23, the combination of Goren et al. and Mohseni et al. teaches all the limitation as claimed in claims 1 and 2. However, the combination fails to disclose testing the leading edge gradient is above a threshold.

Diener et al. disclose a signal detector 520 and a pulse detector coupled to the peak detector that detects from the peak information pulses that meet the configured criteria as disclosed in col. 8 lines 41 - 46.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the method as disclosed by Goren et al. and Mohseni et al. to include the step of detecting the peak information pulses that meet the configured criteria as disclosed by Diener et al. One is motivated as such in order to provide accuracy for identifying location using leading edge operation.

-Regarding claim 5, Goren et al. disclose a positioning method for a radio system **(as disclosed in Fig. 15 and 16)**, the method comprising: receiving

signals at a unit of the system **(receive data signal as disclosed in step 1510, Fig. 15 and further disclosed in col. 22 lines 9 – 11)**, the operation being one of the following: a correlation processing operation **(evaluate correlation function using buffered data signal as disclosed in step 1570, Fig. 15 and further disclosed in col. 22 lines 22 – 30)**, a leading edge processing operation **(as disclosed in step 1585, Fig. 15 and further disclosed in col. 22 lines 36 – 40)**; and then effecting the selected operation **(see Fig. 15 steps 1570 - 1590)**. However, Goren et al. fail to specifically disclose applying at least one test on the received signals to select a processing operation on the signals; wherein the test applied comprises determining whether a signal level of the received signal is above a threshold value; wherein, when the level of the received signal is below the threshold value, the correlation processing operation is selected.

Mohseni et al. disclose a test on the received signal SNR prior to the determination of good frame or bad frame as disclosed step 404, fig. 4 and further disclosed paragraph 50; determining whether the signal level of the received signal is above a threshold value **(determining SNR>SNR threshold = Y as disclosed in step 404, fig. 4)**; and wherein, when the level of the received signal is below the threshold value **(determining SNR>SNR threshold = Y as disclosed in step 404, fig. 4)**.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the method of Goren et al. to do the test of Mohseni et al. before selecting the operation; and wherein, when the level of the

received signal is below the threshold value, select the correlation processing operation as disclosed by Goren et al. One is motivated as such in order to reduce the processing power. However, the combination fails to disclose wherein, when a leading edge gradient is below a gradient threshold value, the leading edge processing operation is selected.

Diener et al. disclose knowing the type of the signal to be located after detecting from the peak information pulses that meet the configured criteria, can be useful in deciding on what type of signaling process to use in order to obtain TDOA measurements to locate the source of the signal as disclosed in col. 8 lines 41 - 55.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the method as disclosed by Goren et al. and Mohseni et al. to include the step of detecting the peak information pulses that meet the configured criteria as disclosed by Diener et al. and to select the leading edge processing operation as disclosed by Goren et al. One is motivated as such in order to provide accuracy for identifying location using leading edge operation.

-Regarding claim 6, the combination further discloses if the leading edge gradient is above the gradient threshold value, the correlation processing operation is selected **(Diener et al., knowing the type of the signal to be located after detecting from the peak information pulses that meet the configured criteria, can be useful in deciding on what type of signaling**

process to use in order to obtain TDOA measurements to locate the source of the signal as disclosed in col. 8 lines 41 - 55; and Goren et al., correlation function quality sufficient step 1575 as disclosed in Fig. 15).

-Regarding claim 24, the combination further discloses the testing means includes means which selects: the leading edge processing operation in response to the leading edge gradient being below the gradient threshold value **(Diener et al., knowing the type of the signal to be located after detecting from the peak information pulses that meet the configured criteria, can be useful in deciding on what type of signaling process to use in order to obtain TDOA measurements to locate the source of the signal as disclosed in col. 8 lines 41 - 55; and Goren et al., estimate TOA step 1580 as disclosed in Fig. 15)**, and the correlation processing operation in response to the leading edge gradient being above the gradient threshold value **(Diener et al., knowing the type of the signal to be located after detecting from the peak information pulses that meet the configured criteria, can be useful in deciding on what type of signaling process to use in order to obtain TDOA measurements to locate the source of the signal as disclosed in col. 8 lines 41 - 55; and Goren et al., correlation function quality sufficient step 1575 as disclosed in Fig. 15)**.

-Regarding claim 27, the combination further discloses when the level of the received signal is above the received signal is above the threshold value **(SNR>SNR threshold = Y as disclosed in step 404, fig. 4)**, testing whether a

leading edge gradient is above a gradient threshold value **(a signal detector 520 and a pulse detector coupled to the peak detector that detects from the peak information pulses that meet the configured criteria as disclosed in col. 8 lines 41 – 46)**; in response to the leading edge gradient value being below the gradient threshold value, performing the leading edge processing operation on the signal **(Diener et al., knowing the type of the signal to be located after detecting from the peak information pulses that meet the configured criteria, can be useful in deciding on what type of signaling process to use in order to obtain TDOA measurements to locate the source of the signal as disclosed in col. 8 lines 41 - 55; and Goren et al., estimate TOA step 1580 as disclosed in Fig. 15)**; response to the leading edge being above the gradient threshold value, performing the correction processing operation on the signal **(Diener et al., knowing the type of the signal to be located after detecting from the peak information pulses that meet the configured criteria, can be useful in deciding on what type of signaling process to use in order to obtain TDOA measurements to locate the source of the signal as disclosed in col. 8 lines 41 - 55; and Goren et al., correlation function quality sufficient step 1575 as disclosed in Fig. 15)**.

7. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goren et al. (U.S. PATENT NO. 7,069,025) in view of Mohseni et al. (U.S. PG-PUB NO. 2005/0048923) and further in view of Rudowicz et al. (U.S. PATENT NO. 6,052,561).

-Regarding claims 11 and 12, the combination of Goren et al. and Mohseni et al. discloses all the limitations as claimed in claim 1. However, the combination fails to specifically disclose before testing whether the leading edge gradient is above a threshold value, reducing the next transmit period and reducing the time period for the leading edge test for operation in a power-saving mode.

Rudowicz et al. disclose before testing whether the leading edge gradient is above a threshold value, reducing the next transmit period and reducing the time period for the leading edge test for operation in a power-saving mode **(see col. 9 line 59-col. 10 line 18)**.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the position method of Goren et al. to include the features as disclosed by Rudowicz et al. One is motivated as such in order to reduce power consumption.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goren et al. (U.S. PATENT NO. 7,069,025).

-Regarding claim 14, Goren et al. disclose all the limitations as claimed in claim 14. Although Goren et al. does not specifically disclose measuring the gradient using the formula:

$$i = \frac{Cdv}{Dt},$$

the examiner takes official notice that the formula was well known in the art and would have been obvious to one of ordinary skills in the art at the time of the invention to use it for measuring gradient.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goren et al. (U.S. PATENT NO. 7,069,025) in view of Mohseni et al. (U.S. PG-PUB NO. 2005/0048923) and further in view of Sanderford, Jr. (U.S. PATENT NO. 5,742,635).

-Regarding claim 15, the combination of Goren et al. and Mohseni et al. discloses all the limitations as claimed in claim 1. However, the combination fails to specifically disclose the leading edge processing operation comprises differentiating the received signal voltage or peak and locating the zero-crossing.

Sanderford, Jr. discloses the leading edge processing operation comprises differentiating the received signal voltage or peak and locating the zero-crossing **(as disclosed in col. 2 lines 17-42)**.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the method of Goren et al. to include the process as disclosed by Sanderford, Jr. One is motivated as such in order to improve the accuracy of a time-of-flight time stamp.

Response to Arguments

10. Applicant's arguments with respect to claims 1-17, 20-24, 26 and 27 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PING Y. HSIEH whose telephone number is (571)270-3011. The examiner can normally be reached on Monday-Thursday (alternate Fridays) 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A. Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. Y. H./
Examiner, Art Unit 2618

/Nay A. Maung/
Supervisory Patent Examiner, Art Unit 2618